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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/750,576 | 12/28/2000 | Heu-Gon Kim | 5000-1-181 | 6522 |

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EXAMINER

CHANG, AUDREY Y

ART UNIT PAPER NUMBER

2872

DATE MAILED: 03/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|--------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/750,576 | KIM ET AL. | |
| | Examiner | Art Unit | |
| | Audrey Y. Chang | 2872 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **January 9, 2004** has been entered.
2. This Office Action is in response to applicant's amendment filed on January 9, 2004 which has been entered.
3. By this amendment, the applicant has canceled claims 1-7 and newly added claims 8-19.
4. Claims 8-19 remain pending in this application.

Specification

5. The **disclosure** is objected to because of the following informalities:
 - (1). The specification disclose that Figure 6 is a "side elevational view illustrating the **process** of adjusting a converging or emitting point of the lens field as shown in Figure 3". It is not clear if the arrangement of Figure 3 is the *same* or *not* as the arrangement of Figure 6. Apparently they are different since Figure 3 uses non-collimating light beam and Figure 6 uses collimated light beam, yet the specification fails to make the necessary distinction.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 14 and 16-19 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification fails to teach how could the inner walls of the slits (of the amplitude pattern) rectify the beam into parallelism, since the collimation (or parallelism) is achieved by the plurality of lenses not by the amplitude mask. The transparent regions will simply pass the collimated light beam. If the non-collimated light beam strikes the inner walls of the slits, it will be deflected to generally non-collimated direction.

The specification and the claims fail to teach how could the **width of the mask be adjusted** since a mask has fixed slit pattern therefore fixed width defined by the slit pattern. It is not clear how to physically “adjust” the width of the slit pattern. Claims 17-19 inherit the rejection from their based claim.

Claim Objections

8. **Claims 8-19 are objected to because of the following informalities:**

(1). It is not clear how does the “grating pattern” recited in claims 8 and 16 relate to the fabrication of the optical fiber grating. If the grating pattern is intended to be recorded in the optical fiber as the fiber grating then such link should be positively identified.

(2). The phrase “a grating pattern” recited in claim 16 is confusing and indefinite since it is not clear how this “a grating pattern” relate to the other “a grating pattern” recited in earlier part of the claim.

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(3). The phrase “substantially greater” recited in claims 15 and 19 are confusing and indefinite since it is not clear what degree of the greatness is considered to be “substantially greater”. That is to say it is not clear the substantiality is viewed with respect to what.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 8-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Bhatia et al (PN. 6,694,075) in view of the patent issued to Bruesselbach (PN. 5,604,829).**

Bhatia et al teaches a method for making apodization fiber grating in a waveguide, which can take the form as optical fiber (110, Figure 6, column 7, line 32-33), wherein the method comprises the step of providing an optical *waveguide* (or *fiber*), a *light source* (92), which may be a *excimer* laser light source having *ultraviolet* wavelength, a *plurality of lenses* (96 and 102), and an *amplitude mask* (112), (Bhatia et al teaches *explicitly* that an amplitude mask may be used to write the fiber grating, please see column 3, lines 35-40). The amplitude mask necessarily has a *slit pattern* which has certain *width* and *spacing*. Bhatia et al teaches that the plurality of lenses is positioned to provide *collimated* light beam, (i.e. parallel with respect to the optical axis) which travels through the amplitude mask to produce a grating pattern on the waveguide or optical fiber. The fiber grating has a grating pattern that is *conformed* with the slit pattern of the amplitude mask since the amplitude mask is used to exposed and to produce the grating pattern. It is implicitly true that the positions of the light source, the plurality of lenses, the mask

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and the optical fiber are adjusted so that the grating pattern produced by the amplitude mask is formed, and conforms, with the slit pattern of the amplitude mask.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the light source and the plurality of lenses are aligned with the amplitude mask and the fiber along an optical axis. However such modification is rather well known in the art as demonstrated by the teachings of **Bruesselbach** in writing a fiber grating using UV laser source through amplitude mask, wherein the light source and lenses are aligned with the mask and optical fiber along an optical axis, (please see Figure 1). It would then have been obvious to one skilled in the art to modify the arrangement of Bhatia et al accordingly for the benefit of providing an alternative and compact arrangement for writing the fiber grating.

With regard to claims 9-11, it is implicitly true that the positions of the lenses are adjusted with respect to each other to obtain the collimated illuminating light beam, as shown in Figure 6. Bhatia teaches that the plurality of lenses includes a convex *cylindrical* lens however it does not teach explicitly that it also includes a concave lens. But since both the lens arrangements achieve the same function, namely collimating the light beam from the light source, to use one arrangement of lens as opposed of the other is considered to be obvious matters of design choices to one skilled in the art.

With regard to claims 12-13 and 17-18, Bhatia et al teaches the light source is an excimer light source generates light of ultraviolet wavelength, (please see column 7, lines 7-10).

With regard to claims 15 and 19, both references do not teach explicitly the width of the amplitude mask is greater than the wavelength of the light used. However this feature is either inherently met or obvious modification to one skilled in the art since the condition is required for if one wants to expose the mask pattern directly on the fiber grating which is generally the case for ultraviolet lithographic process.

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Response to Arguments

11. Applicant's arguments with respect to claims 8-19 have been considered but are moot in view of the new ground(s) of rejection.

12. The newly submitted claims 8-19 have been fully considered and they are rejected for the reasons stated above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Chang, Ph.D.

Audrey Y. Chang
Primary Examiner
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